

SUPERSONIC AIRCRAFT WITH CHANNEL RELIEF CONTROL

Ming Chang
Victor Meza
John M. Morgenstern
Alan E. Arslan

ABSTRACT

A supersonic aircraft comprises a fuselage extending forward and aft along a longitudinal axis, the fuselage having a lower surface and an upper surface, a highly swept low aspect ratio wing coupled to the fuselage and having a forward leading edge and an aft trailing edge, an effector flap coupled to the wing trailing edge, and a tail empennage. The tail empennage is coupled to the fuselage aft of the wing on the fuselage upper surface in a position high relative to the wing. The tail empennage forms a channel region subject to complex shock patterns at transonic conditions. The aircraft further comprises an effector coupled to the tail empennage and a controller coupled to the effector flaps and the effectors. The controller further comprises a control process that reduces drag through channel relief by deflecting both the effector flap down and the effector up.